

REMARKS

Please reconsider the present application in view of the above amendments and the following remarks. Applicant thanks the Examiner for carefully considering the present application.

I. Disposition of Claims

Claims 1-39 are currently pending in the present application. By way of this reply, claims 1, 17, and 25 have been amended. Claims 9-16, 23, 27, and 33-39 have been cancelled without prejudice or disclaimer.

II. Claim Amendments

Independent method claims 1 and 25 have been amended to include the limitation that the natural polymer is at least one of hydroxyethylcellulose and guar gum. Further, claims 1 and 25 have been amended to clarify that the present invention, as would be apparent to one having ordinary skill in the art, relates to “solids-free” solutions. Composition claim 17 has been amended to use the closed language “consisting of,” which excludes those materials that substantially affect the composition. No new matter has been added by way of these amendments as support for these amendments may be found, for example, in paragraphs [0016] and [0030] of the present application.

III. Rejection(s) Under 35 U.S.C § 102

The Present Invention

The present invention is directed to a *solids-free* well fluid composition and

methods of using that composition in which a miscible amine is admixed with a natural polymer (wherein the natural polymer is at least one of guar gum and hydroxyethylcellulose) in an amount effective to prevent substantial decomposition of the natural polymer as the well fluid is used (*i.e.*, in use during drilling operations). The resultant increased thermal stability caused by the mixing of a miscible amine is discussed in paragraphs [0051] and [0052] of the present application.

Significantly, the present invention, unlike the prior art, does not involve cross-linking polymers, but instead is believed to operate by maintaining the pH of the system within an acceptable range. This requires adding a significant amount of amine, as opposed to prior art systems, wherein cross-linkants are required to stabilize the viscosity. The absence of cross-linkants reduces both cost and environmental impact, and represents a significant improvement over prior art systems. This limitation is found in the claims in the term “effective amount” of amine.

Hanlon

Claims 1-3, 5, 6, 8-11, 13, 14, 16-19, 21, 22, 24-26, 28-34 and 36-39 stand rejected as being anticipated by U.S. Patent No. 4,524,829 (Hanlon). Claims 9, 10, 11, 13, 14, 16, and 36-39 have been cancelled, rendering the rejection moot with respect to those claims. Further, claim 1 has been amended to include the limitations of non-rejected claim 7, rendering the rejection moot with respect to claim 1. Similarly, claim 25 has been amended to include the limitations of non-rejected claim 27, rendering the rejection moot with respect to claim 27.

Claim 17 has been amended to recite “A composition for a well fluid, the composition *consisting of* a natural polymer used as a viscosifying agent; and a miscible

amine, wherein the miscible amine is used in an amount effective to prevent substantial decomposition of the natural polymer as the well fluid is used.” Therefore, as amended, composition claim 17 is limited to a natural polymer and a miscible amine, along with materials that do not materially change the properties of the composition.

In contrast, Hanlon discloses using a composition that comprises a zirconium additive used to crosslink with an amine, and an alpha-hydroxy acid. Hanlon, in column 6, goes into some detail as to why all of these chemicals are necessary to achieve the desired result. As Hanlon requires the presence of additional compounds that materially alter the nature of the composition, Hanlon cannot anticipate claim 17, as amended.

Furthermore, as noted above, Hanlon, like most prior art systems, functions by providing a crosslink (using the zirconium additive), as compared to the present system in which enough amine is required in order to provide a buffer for the solution. *See*, e.g. paragraphs 52 and 53 of the originally filed specification.

Therefore, withdrawal of the rejection of claims 1, 17, and 25 is respectfully requested. The remaining claims, which depend from the independent claims, are patentable for at least the same reasons.

Glass

Claims 1-39 stand rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 4,561,985 (Glass). Claims 9-16, 23, 27, and 33-39 have been cancelled, rendering the rejection moot with respect to those claims. To the extent that the rejection still applies to the amended claims, the rejection is respectfully traversed.

Glass only discloses the use of an amine in Example 14. *See* Glass, column 23, lines 52 – 64. However, this example uses the amine, which is described in Glass as a

secondary additive (Glass, column 11, lines 54 – 60), only as part of a test to assess the ability of the amine to beneficiate bentonite in a saline solution. *See* Glass, column 9, lines 36 – 40. Glass is not at all concerned with providing an amine in an amount effective to prevent substantial decomposition of a natural polymer as a well fluid is used as required by amended independent claims 1 and 25 of the present application.

Further, in contrast to the present invention, Glass relates to well fluids that explicitly *require solids* (*i.e.*, bentonite). The present claims, as amended, recite a solids-free solution, which present a number of advantages of solids-containing solutions. Still further, Example 14 (which is the only location where amines are disclosed), does *not* disclose injecting a fluid into a well, as required by claim 25.

Claim 17 has been amended to recite “A composition for a well fluid, the composition *consisting of* a natural polymer used as a viscosifying agent; and a miscible amine, wherein the miscible amine is used in an amount effective to prevent substantial decomposition of the natural polymer as the well fluid is used.” Therefore, as amended, composition claim 17 is limited to a natural polymer and a miscible amine, along with materials that do not materially change the properties of the composition.

Glass, in contrast, requires the addition of numerous agents, including bentonite and various beneficiating agents. Therefore, Glass cannot anticipate claim 17.

Therefore, withdrawal of the rejection of claims 1, 17, and 25 is respectfully requested. The remaining claims, which depend from the independent claims, are patentable for at least the same reasons.

Baranet

Claims 1-3, 5, 6, 8-11, 13, 14, 16-19, 21, 22, 24-34, 36-38 stand rejected under 35

U.S.C. §102(b) as being anticipated by U.S. Patent No. 4,780,223 (Baranet). Claims 9, 10, 11, 13, 14, 16, and 36-39 have been cancelled, rendering the rejection moot with respect to those claims. Further, claim 1 has been amended to include the limitations of non-rejected claim 7, rendering the rejection moot with respect to claim 1. Similarly, claim 25 has been amended to include the limitations of non-rejected claim 27, rendering the rejection moot with respect to claim 27.

Claim 17 has been amended to recite “A composition for a well fluid, the composition *consisting of* a natural polymer used as a viscosifying agent; and a miscible amine, wherein the miscible amine is used in an amount effective to prevent substantial decomposition of the natural polymer as the well fluid is used.” Therefore, as amended, composition claim 17 is limited to a natural polymer and a miscible amine, along with materials that do not materially change the properties of the composition.

In contrast, Baranet discloses a well fluid formed using various *organometallic crosslinkers* to crosslink polysaccharides for improved stability. *See* Baranet, column 4, lines 8 – 18. As Baranet requires the presence of additional compounds that materially alter the nature of the composition, Baranet cannot anticipate claim 17, as amended.

Furthermore, Baranet *explicitly* rejects the use of hydroxyethylcellulose. “Cellulose derivatives containing only hydroxy/alkyl groups (e.g. hydroxyethylcellulose) are not crosslinked to any appreciable degree by zirconium/titanium crosslinkers and are, therefore, excluded from the class of polysaccharides useful herein.” *See* Baranet, col. 5, 25-30.

Finally, Baranet operates in a manner very similar to Hanlon, in that a

crosslinking agent is required in order to maintain the viscosity of the solution. In contrast, the present invention is a fundamentally different solution.

Therefore, withdrawal of the rejection of claims 1, 17, and 25 is respectfully requested. The remaining claims, which depend from the independent claims, are patentable for at least the same reasons.

Mitchell

Claims 1-38 stand rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,227,295 (Mitchell). Claims 9-16, 23, 27, and 33-38 have been cancelled, rendering the rejection moot with respect to those claims. To the extent that the rejection still applies to the amended claims, the rejection is respectfully traversed.

Similar to Hanlon and Baranet, Mitchell discloses a well fluid composition that uses a cross-linkant that substantially increases the cross-linking of a polymer (thereby, increasing the viscosity of the well fluid) at and above certain temperatures. *See* Mitchell, column 4, lines 21 – 35. Again, it is the cross-linking agent of Mitchell, not the amine, which is used to increase the viscosity of the well fluid at increased temperatures.

Thus, Mitchell like most prior art systems, functions by providing a crosslink (using the zirconium additive), as compared to the present system in which enough amine is required in order to provide a buffer for the solution. *See*, e.g. paragraphs 52 and 53 of the originally filed specification.

Claim 17 has been amended to recite “A composition for a well fluid, the composition *consisting of* a natural polymer used as a viscosifying agent; and a miscible amine, wherein the miscible amine is used in an amount effective to prevent substantial

decomposition of the natural polymer as the well fluid is used.” Therefore, as amended, composition claim 17 is limited to a natural polymer and a miscible amine, along with materials that do not materially change the properties of the composition.

Mitchell, in contrast, requires the addition of numerous agents, including crosslinkants. Therefore, Mitchell cannot anticipate claim 17.


Therefore, withdrawal of the rejection of claims 1, 17, and 25 is respectfully requested. The remaining claims, which depend from the independent claims, are patentable for at least the same reasons.

V. Conclusion

The Applicant believes this reply to be responsive to all outstanding issues and place this application in condition for allowance. If this belief is incorrect, or other issues arise, do not hesitate to contact the undersigned or his associates at the telephone number listed below. Please apply any charges not covered, or any credits, to Deposit Account 50-0591 (Reference Number 05542.008002).

Respectfully submitted,

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